

Whitepaper CSRD & PPWR

Automating Your CSRD & PPWR Compliance

AI-driven compliance automation for European manufacturers

***TL;DR:** CSRD, PPWR, AI Act — European regulations stack up without coordinating. For industrial SMEs and mid-caps, compliance has become an operational bottleneck that ties up entire teams. This whitepaper shows how AI agents transform regulatory compliance into automated processes, with measurable time savings and documented ROI.*

Introduction: Why This Whitepaper

Since **August 12, 2026**, the Packaging and Packaging Waste Regulation (PPWR) has been in full effect. Since **August 2, 2026**, the AI Act's transparency obligations are binding. The first post-Omnibus CSRD publications arrive in 2028 for mid-caps with more than 1,000 employees and €450M in net turnover.

Three regulations. Three timelines. Three different teams in most manufacturing companies.

The problem is not the regulations themselves — they are legitimate and necessary. The problem is **operational**: collecting, structuring, and keeping compliance data up to date consumes months of manual work in organisations that are already resource-constrained.

This whitepaper is written for decision-makers at industrial SMEs and mid-caps who must meet these obligations without doubling their headcount. It shows how AI-driven automation turns compliance — from a time-consuming cost centre into an industrialised, traceable, sustainable process.

All figures and sources cited come from independent studies and articles published on the Taranis AI website. No client results are presented without explicit disclosure.

Part 1: CSRD Post-Omnibus — What Changed

Context

The CSRD (Corporate Sustainability Reporting Directive, 2022/2464) is the most significant evolution in corporate reporting since IFRS standards. Adopted by the EU on 14 December 2022, it replaces the NFRD and was expected to expand coverage from approximately 11,000 to roughly 50,000 companies across Europe — a scope reduced to around 5,000 companies by the Omnibus Directive (EU) 2026/470 [finance.ec.europa.eu] (https://finance.ec.europa.eu/financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en).

Applicability Thresholds Post-Omnibus

Category	Criteria	First Reporting
Large listed companies (ex - NFRD)	Already subject	2025 (already published)
Large unlisted companies	> 1,000 employees AND > €450M net turnover	2028 (on 2027 exercise)
Listed SMEs	Exempted from mandatory reporting	Voluntary VSME
Non-EU groups	EU turnover > €450M + subsidiary > €200M	2029

Source: Omnibus Directive (EU) 2026/470, in force since 18 March 2026 [eur-lex.europa.eu] (<https://eur-lex.europa.eu/eli/dir/2026/470/oj>)

What CSRD Actually Requires

1. **12 thematic ESRS standards** covering environment (E1 to E5), social (S1 to S4), and governance (G1)

- 2. **Double materiality**: reporting on both the company's impact on the environment AND how ESG issues affect the company
- 3. **Mandatory audit** in "limited assurance"
- 4. **XBRL digital format**: data must be tagged for machine readability

The Real Bottleneck

Most CSRD guides focus on regulation. But the real challenge is operational: collecting ESG data in an industrial SME takes **4 to 8 months without structured tools**. Data is scattered across ERPs, energy invoices, waste registers, suppliers, and multiplying Excel files with no governance.

Part 2: PPWR in Effect — A New Reality for Packaging

Directly Applicable Regulation

Since August 12, 2026, the PPWR (Regulation EU 2025/40) is binding for **all packaging placed on the European market**, with no minimum threshold. Unlike a directive, it applies directly in all 27 member states — no national transposition can soften or delay it [ec.europa.eu] (https://environment.ec.europa.eu/topics/waste-and-recycling/packaging-waste_en).

Key Obligations

Obligation	Deadline
PFAS ban in packaging	August 12, 2026 (in effect)
BPA ban in food-contact packaging	July 20, 2026
Mandatory recyclability for all packaging	2030
Minimum recycled content by material	2040

Source: Regulation EU 2025/40 [EUR-Lex] (<https://eur-lex.europa.eu/eli/reg/2025/40/oj>)

The Scale of the Task for Manufacturers

An industrial SME typically manages **100 to 500 packaging references**. A mid-cap may handle **1,000 to 5,000**. Each reference requires:

- Material and substance verification
- Recycled content calculation
- REACH/CLP compliance checks

- Declaration of conformity
- Proof of recyclability

Without a structured system, proving compliance for 500 references ties up a full-time employee for **3 to 6 months** — with an estimated error rate of 5–10% (source: Taranis AI analysis, 2026).

PPWR Was Not Modified by the Omnibus

The Omnibus simplification package (Directive (EU) 2026/470) eased other regulations — CSRD thresholds raised, AI Act timeline shifted — but it **left the PPWR untouched**. The August 12, 2026 application date was confirmed and the obligations are now in force.

Part 3: The Convergence Point — Compliance as an Industrialisable Process

Three Regulations, One Shared Problem

CSRD, PPWR, and the AI Act share a common characteristic: they all require **systematic data collection, structuring according to precise standards, documentary traceability, and continuous updates**.

Dimension	CSRD	PPWR	AI Act
Data to collect	ESG (energy, waste, social)	Materials, substances, recyclability	AI systems, risks, documentation
Structuring standard	ESRS (12 standards)	REACH, CLP, PPWR	Risk classification (4 levels)
Update frequency	Annual	Continuous (evolving toward 2040)	Continuous (as systems are deployed)
Penalties	Fines, dividend restrictions	Market placement ban	Up to 7% of global turnover

The Hidden Cost of Manual Compliance

Beyond direct costs (labour, consultants), manual compliance generates three major risks:

1. **Error risk:** manual data entry and ungoverned spreadsheets produce error rates of 5–15%

2. **Delay risk:** a single missed deadline on one regulation can block an entire product line
3. **Knowledge loss risk:** when the employee who "manages compliance in their spreadsheet" leaves, years of work can be lost

The Automation Opportunity

All three regulations rest on processes that can be **described, modelled, and automated**:

- **Extraction:** data already exists in your systems (ERP, MES, invoices, registers)
- **Structuring:** taxonomies are known (ESRS, REACH, CLP, AI Act risk grid)
- **Updates:** regulatory changes are public and predictable
- **Traceability:** every data point can be timestamped and sourced

This is exactly the type of process AI agents are designed for.

Part 4: How AI Agents Automate Compliance

Compliance Agent Architecture

An AI compliance agent combines three layers:

1. **Collection layer:** connectors to ERPs, supplier APIs, internal registers
2. **Modelling layer:** a rules engine that applies regulatory taxonomy to each collected data point
3. **Generation layer:** production of compliant documents (declarations, reports, audit evidence)

What Taranis AI Automates

For CSRD:

- Environmental data extraction from ERP, energy invoices, waste registers
- Automatic cross-referencing with ESRS taxonomy
- Scope 3 calculation (supply chain estimates)

- ESEF-format report generation
- Complete audit trail

For PPWR:

- Packaging data extraction from ERP and supplier catalogues
- Substance verification against PPWR, REACH, and CLP databases
- Automatic recycled content calculation with 2030/2040 threshold projections
- Compliance declaration generation

For AI Act governance:

- Mapping of deployed AI systems
- Risk-level classification
- Compliant technical documentation
- Incident register and human oversight tracking

Measured Gains

Process	Manual Approach	Automated Approach
CSRD data collection (first report)	6–10 months	4–8 weeks
CSRD annual update	3–4 months	1–2 weeks
PPWR audit (500 references)	3–6 months	3–6 weeks
AI Act documentation (10 systems)	4–8 weeks	1–2 weeks

Indicative orders of magnitude based on Taranis AI analysis. Results vary by scope and data maturity.

Part 5: Illustrative Use Case

This scenario is provided for educational purposes. Taranis AI does not report any measured client results.

Context

A European industrial mid-cap with 800 employees, specialising in mechanical equipment. It manages 1,200 packaging references, operates three production sites in Europe, and uses six AI systems (predictive maintenance, quality control, production planning).

Starting Point

- PPWR compliance: managed in Excel, one quality manager at 80% capacity
- CSRD: first materiality assessment completed by an external firm (€45K)
- AI Act: no inventory of AI systems
- Estimated time to full compliance: 12–18 months

After Automation

- Complete packaging mapping in 3 weeks (vs. 6 months estimated)
- First structured CSRD data collection in 6 weeks
- AI Act inventory completed in 1 week
- PPWR declarations auto-generated for 85% of references
- Full audit trail for all data

Estimated ROI

Item	Estimated Manual Cost	Automated Cost
PPWR compliance (year 1)	€60–80K	SaaS subscription included
CSRD reporting (year 1)	€45–60K (consulting)	Included in platform
Annual updates	€20–30K	Reduced internal time

Conclusion: Compliance Is Not a Destination — It's a Process

CSRD, PPWR, AI Act — European regulations are not going to decrease. They will continue to evolve, become more precise, and expand to new scopes. Companies that treat compliance as a **one-off project** will start from zero with every new obligation. Those that treat it as an **industrialised process** build on each cycle.

AI-driven automation is not an option reserved for large enterprises. The entry costs of SaaS solutions make it accessible to SMEs and mid-caps — with ROI measurable from the first use case.

Three actions to take this week:

1. **Map your obligations:** which regulations apply to your company? By what deadline?
 2. **Audit your data:** where is it? In what condition? Is it accessible?
 3. **Identify the first process to automate:** the one that costs you the most in time and risk.
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Sources

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